ORANGE COVE IRRIGATION DISTRICT

CEC APLRP Project Case Study

July 2002

Prepared for

Ricardo Amón
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814
(916) 654-4381
http://www.energy.ca.gov/ag

By

Irrigation Training and Research Center (ITRC)
California Polytechnic State University (Cal Poly)
San Luis Obispo, CA 93407
805-756-2433
www.itrc.org
djhowes@calpoly.edu

ORANGE COVE IRRIGATION DISTRICT

Contact Information

Orange Cove Irrigation District- 1130 Park Blvd, Orange Cove, CA 93646.

James Chandler, Manager/Engineer
Tel: 559.626.4461
Fax: 559.626.4463
email: ocid@psnw.com

Project 1. Installation of Telemetry Equipment and Land Owner Load Reduction Program

Site

Orange Cove Irrigation District (OCID) is located on the east side of the Central San Joaquin Valley southeast of Fresno. The district receives water from the Friant-Kern Canal.

Project Description

The district proposed and designed a project that curtailed 600 kW of peak load. The application for this project was received on June 29, 2001. The project was started September 2001 and fully completed October 2001. OCID received the first 50% of the grant in December 2001. Final verification was completed and the district received their final grant payment in October 2002.

To reduce peak load, remote system monitoring, measurement and control components were installed for sections of the water distribution system not currently equipped. The equipment provided the agency with the capability to monitor load, flow, and pumping efficiency in real time. In addition, Systems 3A & 8 were controlled to respond to critical water levels in their respective reservoirs. Critical alarms were also installed as part of the telemetry project. OCID reprogrammed the pump activation process so that the most efficient pumps would run the majority of the operational hours and the least efficient pumps would run the least.

The agency also instituted a landowner load reduction program, whereby individual growers signed up with OCID to commit to a kW reduction during the peak period. In return, the district reduced the price of water for the growers.

Verification

Time-of-use meters were used to verify the peak load reduction, comparing the peak period electrical use of the 2002 season with that of the 2000 season.

Project Results

Summary Category	Results
Total Project Cost	$283,485
Total Grant Payment	$180,000
Actual kW Reduced	600
Grant Payment per kW Reduced	**$300**

Initially, OCID had planned to have the project completed by September 31, 2001. This qualified them for $300/kW curtailed grant. However, because of the tragedies of September 11, 2001, some of the equipment the district needed could not be delivered and the district was not able to complete the project until October 17, 2001. For this unforeseen reason the district was given an extension to the $300/kW deadline.

Project 2. Construction of a Regulating Reservoir, installation of additional Telemetry on District Facilities and Valves on Farmer Owned Pumps

Project Description

The district proposed and designed a project that curtailed 178 kW of peak load. The application for this project was received on March 4, 2002. The project was started April 2002 and fully completed June 2002. OCID received the first 50% of the grant in July 2002. Final verification was completed and the district received their final grant payment in October 2003.

The peak load reduction was accomplished by equipping farmer-owned pumps with clock timers, flow control valves, and time-of-use meters to turn the pumps off before 12 PM and on after 6 PM. The proposal also included construction of a regulating reservoir and installation of telemetry equipment, reducing the peak load due to management practices and increased water storage. This project is considered Category 1 because installation of the regulating reservoir is the major cost in the project.

Verification

Time-of-use meters were used to verify the peak load reduction, comparing the peak period electrical use of the 2003 season with that of the 2000 season.

Project Results

Summary Category	Results
Total Project Cost	$79,678
Total Grant Payment	$44,500
Actual kW Reduced	178
Grant Payment per kW Reduced	**$250**

Photographs

Booster Station 1 and radio antenna. This station has telemetry installed so that information from the pump station can be sent to the office via radio and changes can be made such as pumping operation at the office without traveling to the pump station.

Panel at Booster Station 1 that records and sends information from the station to the central office.

Electric panel at a pump.

Pump Station at OCID with Telemetry and a VFD. Flow rate meters were installed so that pumping capacity could be monitored throughout the day. This allows the district to make sure the flow is minimized during the on peak period and maximized during the off peak.

SCADA screen in OCID office, which allows district personnel to make changes to and monitor pumping plant operation and reservoir elevations.

Installation of an automatic valve that turns the flow off at the turnout at 12pm and back on at 6pm.